National Fish Tissue Study

The National Study of Chemical Residues in Lake Fish Tissue is a four year national screening-level freshwater fish contamination study. It is the first such study to be based on a probabilistic sampling design, and it will generate data on the largest set of Persistent, Bioaccumulative, and Toxic (PBT) chemicals ever studied in fish.

Purpose: Priority activity under the PBT initiative. The study supports that initiative by providing data for a large set of chemicals in fish. It will define national background levels for the 265 chemicals in fish, establish a baseline to track progress of pollution control activities, and identify areas where contaminant levels are high enough to warrant further investigation.

Chemicals: 265; including PCB congeners and breakdown products; (See Attachment #1)

Sample Locations: Lakes and reservoirs of the continental U.S. (See Attachment #2)

Sample Design: Probabilistic design. Allows the development of national estimates of the mean levels of PBT chemicals in fish tissue.

- 500 randomly selected lakes and reservoirs from the estimated total 270,000 in the continental U.S. (the Great Lakes and the Great Salt Lake were excluded).
- Selected in 1999 from River Reach File 3 (RF3).
- 6 size categories from 2.5 to over 900,000 surface acres, with a similar number of lakes in each category. The probabilities of selection vary to decrease the extent to which small lakes dominate the sample.
- The size categories in acres of surface area are: 2.5-12.5; >12.5-25; >25-125; >125-1250; >1250-12500; >12500.
- The sampling design incorporates spatial constraints to achieve better geographic representation.
- Each is a permanent water body with a permanent fish population that has a depth of at least one meter and at least 1000 square meters of open, unvegetated water.
- 4 annual statistical subsets. Replicate samples collected from 10% of the lakes to estimate variability.
- Target species are used to limit the number of species.
- Most fish composites are being collected during the summer and fall of each sample year.
- One predator and one bottom-dwelling species sampled at each lake.. Composites consist of 5 adult fish of similar size that are large enough to provide 560 grams (20 ounces) of tissue for analysis of fillets for predators and whole bodies for bottom dwellers.
- Excellent QA/QC makes all data comparable.

Study Duration: 4 years (process began in 1998 with sampling in 1999 & 2000-2003)

Results: Only the first year of data are available (1999-2000, combined, represent the first year).

- Dioxins/Furans and Total PCBs were detected at all sites
- Mercury at 139 of the 143 sites
- Total DDT at 134 of the 143 sites
- Chlordane at 81 of the 143 sites
- Dieldrin at 20 of the 143 sites
- Mirex at 9 of the 143 sites
- Octachlorostyrene and Aldrin at 8 of the 143 sites
- See Attachment #3

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Short-term Followup:

Long-term Followup:

Attachment #1

National Fish Tissue Study Target Analyte List
265 Analytes

Method	Analyses	CAS No.	Minimum Level
Method 1613B (17 analytes)	2,3,7,8-TCDD	1746-01-6	0.1-1.0 ng/kg
	2,3,7,8-TCDF	51207-31-9	
	1,2,3,7,8-PeCDD	40321-76-4	
	1,2,3,7,8-PeCDF	57117-41-6	
	2,3,4,7,8-PeCDF	57117-31-4	
	1,2,3,4,7,8-HxCDD	39227-28-6	
	1,2,3,6,7,8-HxCDD	57653-85-7	
	1,2,3,7,8,9-HxCDD	19408-74-3	
	1,2,3,4,7,8-HxCDF	70648-26-9	
	1,2,3,6,7,8-HxCDF	57117-44-9	
	1,2,3,7,8,9-HxCDF	72918-21-9	
	2,3,4,6,7,8-HxCDF	60851-34-5	
	1,2,3,4,6,7,8--HpCDD	35822-46-9	
	1,2,3,4,6,7,8-HpCDF	67562-39-4	
	1,2,3,4,7,8,9-HpCDF	55673-89-7	
	OCDD	3268-87-9	
	OCDF	39001-02-0	
Method 1625 (40 analytes)	Benzo[a]pyrene[1] (PAH) **(Tier 1)**	50-32-8	330 - 1660 µg/Kg for all except Tetrabromo-bisphenol A which has ML of 16600 µg/Kg
	Hexachlorobenzene (HCB) **(Tier 1)**	118-74-1	
	1,2,4-Trichlorobenzene (TCB) **(Tier 1)**	120-82-1	
	Dibenz[a,h] anthrancene (PAH)	53-70-3	
	Benzo[a]anthracene (PAH)	56-55-3	
	Acenaphthene (LMW Aromatics)	83-32-9	
	Phenanthrene (PAH)	85-01-8	
	Fluorene	86-73-7	
	Hexachlorobutadiene	87-68-3	
	Naphthalene	91-20-3	
	1,2-Dichlorobenzene	95-50-1	
	1,2,4,5-Tetrachlorobenzene	95-94-3	
	4-Bromophenyl phenyl ether	101-55-3	
	1,4-Dichlorobenzene(p)	106-46-7	
	Anthracene (PAH)	120-12-7	
	Pyrene (PAH)	129-00-0	
	Benzo[g,h,i]perylene (PAH)	191-24-2	
	Indeno[1,2,3-cd]pyrene (PAH)	193-39-5	
	Perylene (PAH)	198-55-0	
	Benzo[b]fluoranthene (PAH)	205-99-2	
	Fluoranthene (PAH)	206-44-0	
	Benzo(k)fluoranthene	207-08-9	
	Acenaphthylene	208-96-8	
	Chrysene (PAH)	218-01-9	
	1,3-Dichlorobenzene	541-73-1	
	Pentachlorobenzene	608-93-5	
	Nitrobenzene (1 for bioaccumulation)	98-95-3	

[1] PAHs and Azaarenes. SRC has identified 30 polycyclic aromatic hydrocarbons or nitrogen analogs (azaarenes). These compounds are not commercially produced (and have never except for laboratory use because they are potent carcinogens) but are formed during combustion processes so they are widespread environmental contaminants.

Method	Analyses	CAS No.	Minimum Level
Method 1625 (continued)	Pentachlorophenol (Tier 1)	87-86-5	(See above box)
	Dibutyl phthalate (Tier 1)	84-74-2	
	Butyl benzyl phthalate	85-68-7	
	2,4,5-Trichlorophenol	95-95-4	
	4,4'-Methylenebis(2-chloroaniline)	101-14-4	
	Bis(2-ethylhexyl)phthalate	117-81-7	
	Phenol, 2,4,6-tris(1,1-dimethylethyl)-	732-26-3	
	Phenol (1 for bioaccumulation)	108-95-2	
	3,3'-Dichlorobenzidine	91-94-1	
	Benzo[j]fluoranthene (PAH)	205-82-3	
	Diethystilbestrol (DES)	56-53-1	
	Tetrabromobisphenol A	79-94-7	
	Nonylphenol	25154-52-3	
Method 1631B, Appendix (1 analyte)	Mercury		1 ng/g
Method 1632A (5 analytes)	Total inorganic arsenic		0.1 µg/g
	arsenic(III)		0.1 µg/g
	arsenic (V)		0.1 µg/g
	monomethylarsonic acid (MMA)		0.05 µg/g
	dimethylarsonic acid (DMA)		0.1 µg/g
Method 1656 (34 analytes)	DDT, p,p'-	50-29-3	20 ug/kg
	DDD, p,p'-	72-54-8	50 ug/kg
	DDE, p,p'-	72-55-9	20 ug/kg
	a-chlordane	5103716	20 ug/kg
	g-chlordane	5566347	50 ug/kg
	Oxychlordane (Trans-beta isomer)	27304138	50 ug/kg
	Hexachlorocyclohexane*		*see alpha, gamma, beta BHC
	Hexachlorocyclohexane, gamma, γ-BHC (Lindane)	58-89-9	isomers
	Hexachlorocyclohexane, beta- (BHC)	319-85-7	10 ug/kg
	Hexachlorocyclohexane, (BHC) alpha-	319-84-6	50 ug/kg
	Hexachlorocyclohexane, (BHC) delta-	319-86-8	20 ug/kg
	Dieldrin	60-57-1	10 ug/kg
	Endrin	72-20-8	10 ug/kg
	Methoxychlor	72-43-5	20 ug/kg
	Heptachlor	76-44-8	50 ug/kg
	Endosulfan sulfate	1031078	100 ug/kg
	Endosulfan, alpha-	959988	50 ug/kg
	Endosulfan, beta-	33213659	50 ug/kg
	Dicofol	115-32-2	200 ug/kg
	Kepone (Chlordecone)	143-50-0	200 ug/kg
	Aldrin	309-00-2	50 ug/kg
	Heptachlor epoxide	1024-57-3	50 ug/kg
	Trifluralin	1582-09-8	20 ug/kg
	Mirex	2385-85-5	20 ug/kg
	Toxaphene	8001-35-2	200 ug/kg
	Permethrin I	61949766	100 ug/kg (est.)
	Permethrin II	61949777	1000 ug/kg
	Ethalfluralin	55283686	50 ug/kg
	Pentachloronitrobenzene Pentachloroanisole	82-68-8	10000 ug/kg
	Isodrin	608-73-1	2000 ug/kg
	Pendimethalin	465736	20 ug/kg
	oxychlordane	40487421	100 ug/kg
	cis nonaclor	27304138	200 ug/kg
	trans nonaclor	5103731	
	octachlorostyrene	39765805	20 ug/kg
		29082744	20 ug/kg
			100 ug/kg
			Tissue: unit = ug/kg

Method	Analyses	CAS No.	Minimum Level
Method 1657 (9 analytes)	Ethyl parathion	56-38-2	100 ug/kg
	Disulfoton	298-04-4	200 ug/kg
	Diazinon	78342	200 ug/kg
	Ethion	563-12-2	100 ug/kg
	Chloropyrifos	2921-88-2	200 ug/kg
	Terbufos	13071-79-9	1000 ug/kg
	Disulfoton sulfone	2497065	200 ug/kg
	Terbufos sulfone	56070167	500 ug/kg
	Paraoxon	311455	500 ug/kg
Method 1668 (159 individual congeners plus remaining congeners as pairs and total PCBs)	Chlorinated biphenyls congeners (PCBs)	1336-36-3 57465-28-8 32774-16-6	2-100 ng/kg

Notes:

1. Homogenized samples of fish tissue from each lake are being archived so that analysis may be done on additional analytes at a later date.
2. Reporting levels for dioxins/furans in the National Fish Tissue Study are 10 times lower than the ML specified in Method 1613B.
3. Benzo(k)fluoranthene and Benzo(j)fluoranthene coclute and will be reported as Benzo(j/k)-fluoranthene. They remain shown above as two separate isomers.
4. Nonylphenol is calibrated, calculated and integrated as a group of nonylphenol isomers, rather than as the single 4-nonylphenol isomer.
5. Hexachlorocylohexane is reported as it's individual components alpha, beta, delta, and gamma BHC. See notation in list.
6. S-fenvalerate was dropped from the study because it is not detected by M1657 and pursuit of a separate method was deemed unnecessary.
7. Disulfoton solfoxide and terbufos sulfoxide will not be analyzed by Method 1657 due to lack of standards worldwide. They will be added back to the list if standards become available.
8. Additional 1625 compounds not specifically targeted in the study and not shown above will be reported.

Attachment #2

National Study of Chemical Residues in Lake Fish Tissue
First Year Sampling Sites

State	Lake Name	County	Latitude			Longitude			Lake Area (ha)	Lake ID
			Deg	Min	Sec	Deg	Min	Sec		
AL		WALKER	33	56	55.32	87	19	53.40	4	OWOW99-0022
AL	WALTER F GEORGE RES	BARBOUR	31	56	3.84	85	5	48.84	15282	OWOW99-0072
AL	Lewis Smith Lake	WINSTON	34	4	51.24	87	7	55.20	8793	OWOW99-0136
AL	Wheeler Lake		34	39	49.93	87	2	23.21	27143	OWOW99-0161
AL	Dannelly Reservoir	WILCOX	32	5	53.88	87	22	56.28	4738	OWOW99-0197
AR	Norfolk Lake	BAXTER	36	24	22.68	92	14	31.20	7546.18	OWOW99-0143
AR	Ozark City Lake	FRANKLIN	35	31	54.84	93	49	57.00	166.23	OWOW99-0497
AR	Greer's Ferry Lake	CLEBURNE	35	33	39.60	92	9	47.16	4803	OWOW99-0571
AR		CLARK	34	11	4.92	93	6	13.32	151.71	OWOW99-0623
AZ	Apache Lake	MARICOPA	33	35	15.36	111	17	32.28	888	OWOW99-0045
CA	Clear Lake	LAKE	39	1	35.76	122	46	13.80	15956	OWOW99-0126
CO	Turk's Pond	BACA	37	29	10.32	102	22	56.28	22	OWOW99-0019
CO	Willow Creek Reservoir	WELD	40	48	8.64	104	27	47.16	1	OWOW99-0903
CO	Cherry Creek Reservoir	ARAPAHOE	39	38	22.92	104	51	15.48	347	OWOW99-1569
FL	Butler Lake	UNION	30	2	12.12	82	20	21.84	363	OWOW99-0060
FL	Tsala Apopka Lake		28	55	27.23	82	21	2.52	0	OWOW99-0100
FL	Mill Dam Lake	MARION	29	10	49.44	81	50	37.32	140	OWOW99-0135
GA	Unnamed	ELBERT	34	5	3.12	82	46	48.72	2	OWOW99-0186
GA	Boatright Lake	WASHINGTON	32	48	40.32	82	42	29.52	13	OWOW99-0661
GA	Fishing Lake	CARROLL	33	39	14.76	84	55	21.72	6	OWOW99-1360
GA	J Strom Thurmond Res	COLUMBIA	33	39	32.04	82	23	53.88	10307	OWOW99-1461
IA	Morse Lake	WRIGHT	42	50	20.04	93	41	41.28	41	OWOW99-0165
ID	Brownlee Reservoir	WASHINGTON	44	40	32.74	117	4	42.35	6071	OWOW99-0079
ID	Palisades Reservoir	BONNEVILLE	43	14	36.96	111	6	40.68	6062	OWOW99-0127
ID	Priest Lake	BONNER	48	34	4.37	116	51	27.50	9454	OWOW99-0554
ID	Bear Lake		42	0	13.32	111	19	58.48	28329	OWOW99-0627
IL	Unnamed lake	WILLIAMSON	37	46	23.88	88	47	0.60	6	OWOW99-0015
IL	Buck Lake	DE KALB	41	38	51.00	88	39	36.00	4	OWOW99-0041
IL	Otter Lake	MACOUPIN	39	27	4.32	89	53	35.16	126	OWOW99-0115
IL	Shooks Pond	ROCK ISLAND	41	27	17.64	90	36	11.16	2	OWOW99-0140
IL	Unnamed lake	TAZEWELL	40	35	1.68	89	35	7.80	17	OWOW99-0515
IN	Baire Lake	PUTNAM	39	43	58.80	86	45	17.64	3	OWOW99-0141
KS	Tuttle Creek Lake	POTTAWATOMIE	39	27	25.20	96	42	4.68	2153	OWOW99-0119
LA	Lake Bisteneau	WEBSTER	32	26	17.16	93	23	12.48	6282.91	OWOW99-0173
LA	Lac des Allemands		29	55	14.95	90	34	18.05	5957.2	OWOW99-0999
MA	North Watuppa Pond	BRISTOL	41	42	11.16	71	6	27.00	674	OWOW99-0017

ME	Heald Ponds	SOMERSET	45	11	4.20	69	51	48.60	9	OWOW99-0042
ME	Lower Middle Branch Pond	HANCOCK	44	52	34.32	68	13	37.20	104	OWOW99-0092
ME	Stiles Lake	HANCOCK	44	58	23.16	68	0	34.20	17	OWOW99-0166
ME	Little Pond	OXFORD	44	9	11.88	70	35	16.44	11	OWOW99-0192
ME	Ragged Lake	PISCATAQUIS	45	49	13.08	69	22	4.08	1047	OWOW99-0210
ME	Moose Pond	CUMBERLAND	44	3	14.04	70	48	17.64	679	OWOW99-0217
MI	Walloon Lake	EMMET	45	18	1.80	85	0	41.40	1832	OWOW99-0009
MI	West Lake #1	LAPEER	43	5	56.76	83	24	53.64	1	OWOW99-0014
MI	Lake Chapin	BERRIEN	41	55	37.56	86	20	52.80	220	OWOW99-0016
MI	Wintergreen Lake	KALAMAZOO	42	23	51.36	85	23	5.64	13	OWOW99-0116
MN	LaSalle	HUBBARD	47	20	29.40	95	9	52.92	90	OWOW99-0005
MN	Long	HUBBARD	46	53	10.68	94	59	57.84	784	OWOW99-0031
MN	Cantlin	SHERBURNE	45	29	9.24	93	35	13.20	41	OWOW99-0033
MN	Pokegama Lake	ITASCA	47	10	51.60	93	34	37.20	6313	OWOW99-0055
MN	Fox	BECKER	46	46	49.80	95	54	30.24	56	OWOW99-0081
MN	White Sand	CROW WING	46	21	6.48	94	17	12.48	159	OWOW99-0083
MN	Namakan Lake		48	33	28.51	92	49	25.93	5686	OWOW99-0110
MN	Linwood Lake	ST LOUIS	47	19	10.92	92	6	20.52	3	OWOW99-0130
MN	Hubert	CROW WING	46	29	13.92	94	16	7.32	511	OWOW99-0155
MN	Rice	STEARNS	45	22	29.64	94	36	56.52	618	OWOW99-0157
MN	Woman	CASS	46	57	30.96	94	16	21.72	2396	OWOW99-0180
MN	O'Dowd	SCOTT	44	44	28.32	93	31	0.48	118	OWOW99-0182
MN	Sturgeon	PINE	46	22	48.72	92	45	22.32	666	OWOW99-0183
MN	Cass Lake		47	25	23.48	94	31	53.94	12050	OWOW99-0205
MN	Geneva	FREEBORN	43	47	31.20	93	16	26.76	694	OWOW99-0207
MN	Lake Hendricks								616	OWOW99-0457
MN	South McDougal	LAKE	47	36	51.48	91	33	29.16	113	OWOW99-0460
MN	Lac La Croix	ST LOUIS	48	17	33.72	92	4	40.08	5769	OWOW99-0485
MN	Fish Lake Reservoir	ST LOUIS	46	56	20.76	92	16	25.32	1214	OWOW99-0605
MN	East Leaf	OTTER TAIL	46	23	54.96	95	25	19.92	170	OWOW99-0906
MN	Dead	OTTER TAIL	46	28	45.48	95	44	58.20	2988	OWOW99-1431
MN	Blind	AITKIN	46	39	0.72	93	44	45.96	120	OWOW99-1455
MN	Charlotte	WRIGHT	45	9	3.24	93	44	48.12	94	OWOW99-1508
MN	Carlos	DOUGLAS	45	57	50.76	95	21	22.32	1040	OWOW99-1532
MS	Lake Lucille	LAUDERDALE	32	34	30.00	88	32	38.76	12	OWOW99-0098
MS	Bailey Lake	CARROLL	33	28	37.20	89	50	15.00	50	OWOW99-0146
MT	Tiber Reservoir	LIBERTY	48	22	39.00	111	12	15.84	1076	OWOW99-0029
MT	Fort Peck Reservoir	VALLEY	47	44	0.60	106	44	36.60	98766	OWOW99-0084
MT		GARFIELD	47	7	47.28	107	28	39.36	6	OWOW99-0104
MT	Rape Creek dam	BEAVERHEAD	44	59	50.28	113	11	42.00	10	OWOW99-0153
MT	Cabin Creek	CARTER	45	37	24.24	104	40	28.92	8	OWOW99-0178
NC	Kings Mt. Reservoir	CLEVELAND	35	18	3.60	81	27	21.24	552	OWOW99-0062
NC	Phelps Lake		35	46	7.36	76	27	36.18	6718	OWOW99-0139
NC	B Everett Jordan Lake	CHATHAM	35	46	23.52	79	0	59.40	5787	OWOW99-0162
NC	Lake Gaston	WARREN	36	32	27.60	78	1	8.40	7951	OWOW99-0164
ND	Long Lake	KIDDER	46	44	20.40	100	3	46.80	1300	OWOW99-0006
ND		MCINTOSH	46	7	5.88	99	28	20.28	204	OWOW99-1456

NE	Lake Minatare	SCOTTS BLUFF	41	56	1.32	103	29	42.00	784	OWOW99-0453
NE	Jeffrey Reservoir	LINCOLN	40	56	27.60	100	24	34.20	226	OWOW99-0494
NH	Lake Winnepesaukee	BELKNAP	43	36	9.36	71	20	27.60	18545	OWOW99-0167
NJ		CAMDEN	39	47	5.28	74	51	45.72	4	OWOW99-0013
NM	Navajo Reservoir	RIO ARRIBA	36	31	4.08	107	36	37.80	1892.41	OWOW99-0169
NV	LAKE MEAD	CLARK	36	16	57.36	114	22	23.16	39373	OWOW99-0652
NY	Sylvia Lake	ST LAWRENCE	44	15	9.72	75	24	50.04	125	OWOW99-0113
NY	Chautauqua Lake	CHAUTAUQUA	42	7	59.20	79	22	40.12	5438	OWOW99-0114
NY	Copake Lake	COLUMBIA	42	8	38.76	73	35	47.40	158	OWOW99-0138
NY	Colgate Lake	GREENE	42	14	8.16	74	7	8.40	11	OWOW99-0488
NY	Little Wolf Pond	FRANKLIN	44	15	13.32	74	28	47.64	65	OWOW99-0542
NY	Brant Lake	WARREN	43	42	55.44	73	42	25.20	572	OWOW99-0593
OH	Lake Rupert	VINTON	39	11	23.28	82	31	19.56	133	OWOW99-0066
OK	OOLOGAH L	ROGERS	36	34	55.56	95	35	31.92	6099.87	OWOW99-0068
OK	Fort Cobb Lake	CADDO	35	11	53.52	98	29	27.24	1654.07	OWOW99-0069
OK	Hugo Lake	CHOCTAW	34	5	8.52	95	25	26.04	4950.45	OWOW99-0099
OK	KEYSTONE L	PAWNEE	36	14	53.16	96	22	4.80	5454.54	OWOW99-0219
OK	BROKEN BOW L	MCCURTAIN	34	16	49.08	94	40	46.92	5342.04	OWOW99-0499
OK		MCCLAIN	34	59	12.48	97	31	44.76	12.21	OWOW99-0544
OK		OSAGE	36	36	48.60	96	47	36.60	2.18	OWOW99-0669
PA	unnamed pond	FRANKLIN	39	56	42.36	77	48	43.56	2	OWOW99-0089
PA	Pike Lake #3	PIKE	41	15	1.44	74	57	5.04	6	OWOW99-0188
PA	unnamed pond	BRADFORD	41	56	39.48	76	23	19.68	10	OWOW99-0213
PA	Crooked Creek Lake	ARMSTRONG	40	40	55.92	79	29	8.52	151	OWOW99-0489
SC	Lake Murray	NEWBERRY	34	5	15.72	81	28	0.12	19602	OWOW99-0987
SD	Lake Mitchell	DAVISON	43	45	23.04	98	3	21.60	284	OWOW99-0007
SD	Shade Hill Reservoir	PERKINS	45	46	11.64	102	15	16.92	959	OWOW99-0056
SD		STANLEY	44	21	57.60	101	0	44.64	25	OWOW99-0982
TN	J PERCY PRIEST L	DAVIDSON	36	5	56.76	86	33	37.08	5370	OWOW99-0087
TN	Norris Lake	UNION	36	18	40.68	83	49	58.80	3749	OWOW99-0187
TX	Rogers Lake	MONTGOMERY	30	11	6.36	95	23	14.64	9.31	OWOW99-0020
TX	E V Spence Reservoir	COKE	31	56	13.56	100	34	39.72	6055	OWOW99-0021
TX	Lake Arrowhead	CLAY	33	42	37.08	98	22	44.40	6561	OWOW99-0048
TX	Lake Travis	TRAVIS	30	24	55.44	98	1	32.88	7239.69	OWOW99-0070
TX		ZAVALA	28	54	23.40	99	38	57.84	4.95	OWOW99-0196
TX		HOUSTON	31	10	9.84	95	41	0.24	23.46	OWOW99-0220
TX	Lake Corpus Christi	LIVE OAK	28	12	4.68	97	55	42.24	7831	OWOW99-0221
TX	Lake Tawakoni	HUNT	32	56	57.12	96	0	38.52	15333.3	OWOW99-0223
TX	Lake Coleman	COLEMAN	32	2	13.20	99	30	50.40	705.13	OWOW99-0471
TX	L TEXOMA	GRAYSON	33	51	21.96	96	47	23.64	23548.9	OWOW99-0473
TX	Lake Childress	CHILDRESS	34	27	40.68	100	20	57.12	120.72	OWOW99-0495
TX	Unnamed lake	NAVARRO	32	0	52.20	96	49	37.92	12.44	OWOW99-0496
TX	B A Steinhagen Lake		30	50	56.29	94	11	30.59	5549	OWOW99-0524
TX	Lake Pat Mayse	LAMAR	33	49	37.20	95	35	54.24	2389.57	OWOW99-0573

TX	HUBBARD CR RES	STEPHENS	32	46	31.08	99	0	24.48	5960.07	OWOW99-0596
TX	Stillhouse Hollow Lake	BELL	31	0	22.32	97	36	31.32	2663.76	OWOW99-0645
TX	L PALESTINE	HENDERSON	32	11	9.60	95	29	17.16	9533.34	OWOW99-0673
UT	Gunlock Reservoir	WASHINGTON	37	15	42.48	113	46	31.80	101	OWOW99-0102
VA	Lake Anna	LOUISA	38	3	51.84	77	50	37.68	5254	OWOW99-0064
VA	unnamed	CAROLINE	37	58	1.92	77	18	43.92	11	OWOW99-0090
VA	Big Lake	HALIFAX	36	40	55.20	79	5	25.08	10	OWOW99-0512
VA	Griggs Pond	HENRICO	37	25	23.88	77	18	37.44	6	OWOW99-0614
VT	Lake Whitingham	WINDHAM	42	49	41.52	72	53	29.40	1565	OWOW99-0093
WA	Frenchman Hills Lake	GRANT	46	58	54.88	119	35	17.77	138	OWOW99-0179
WA	Cresent Lake	CLALLAM	48	5	5.32	123	46	2.71	1995	OWOW99-0202
WA	Lake Chelan	CHELAN	48	1	33.96	120	19	55.38	13091	OWOW99-0504
WA	Rimrock Lake	YAKIMA	46	38	25.08	121	9	42.44	952	OWOW99-0529
WA	Lake Dorothy	KING	47	35	3.41	121	22	59.88	102	OWOW99-0654
WV	Summersville Lake	NICHOLAS	38	14	27.24	80	51	15.12	844	OWOW99-0637
WY		PARK	44	29	33.00	109	15	30.96	1385	OWOW99-0528

First Year (1999-2000) Results for All Fish Composites

	Dioxins/Furans [1,2]	Total PCBs (sum of congeners) [3]	Mercury	Total DDT [4]	Chlordane [4]	Dieldrin	Mirex	Octachlorostyrene	Aldrin	Benzo(a)pyrene	Hexachlorobenzene	Toxaphene
Number of Sites	143	143	143	143	143	143	143	143	143	143	143	143
Number of Non-Detects	0	0	4	9	62	123	134	135	135	143	143	143
Number of Detects	143	143	139 97%	134 93.7%	81	20	9	8	8	0	0	0
Minimum Concentration (ppb)	0.000000303	0.0607	23.2	0.774	0.496	0.462	1.22	0.868	2.21	0	0	0
Maximum Concentration (ppb)	0.02414998	1266.2485	1377	1481.4	95.32	63.8	8.37	18.776	7.66	0	0	0

[1] Dioxins/Furans data include the 12 dioxin-like PCB congeners
[2] Dioxins/Furans values are based on TEQ using one half (½) the MDL for non-detected analytes.
[3] Total PCB values based on sum of congeners using zero for non-detected congeners
[4] Summed concentrations for Total DDT and for Chlordane based on assumption that non-detected analytes equal zero.

Attachment #3